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TEACHING PRACTICES AND THE DEVELOPMENT OF HIGHER ORDER THINKING SKILLS IN SECONDARY SCHOOL STUDENTS IN THE NORTH WEST REGION OF CAMEROON

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Abstract:
Higher order thinking skills are essential for the 21st century youth and the workforce. There is however, concern on the extent to which various teaching practices enhance these skills in the secondary school student in Cameroon. The study therefore examined the influence of teaching practices on higher order thinking skills on secondary school students in the North West Region of Cameroon. Three hypotheses sought to examine whether teaching methods, teaching learning materials and assessment activities influenced higher order thinking skills among secondary school students in the North West region of Cameroon. The study was a descriptive survey and data were collected using a questionnaire and an observation guide. The sample consisted of 320 students. Data were analyzed inferentially using the Pearson Product Moment Correlation. Findings revealed that teaching practices influence higher order thinking skills in secondary school students in the North West region of Cameroon only to a small extent. Specifically, teaching methods influence higher order thinking skills but assessment activities, and teaching learning materials do not influence higher order thinking skills. Based on the findings, recommendations are discussed.

Keywords: critical thinking, higher order thinking, teaching practices, teaching methods, instructional materials, assessment, secondary schools, Cameroon

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1. Introduction

The high unemployment among secondary school leavers poses fundamental questions about self – employment and creativity among secondary school students. It also raises questions about the skills students are impacted with in secondary schools and its relevance to the job market. Cameroon aims at alleviating poverty and becoming an industrialized country by 2035 (Cameroon, 2009) and so educational practices must reflect this vision by equipping students with the relevant skills. We need "thinking" students who can incessantly respond to real-world demands (Vijayaratnam, 2012). Higher order thinking skills include critical, logical, reflective, metacognitive, and creative thinking. Successful applications of the skills result in explanations, decisions, performances, and products that are valid within the context of available knowledge and experience and that promote continued growth in these and other intellectual skills (king, Goodson and Rohani, n.d).

The idea that teachers and the teaching practices they implement are important for students' educational outcomes has been steadily gaining grounds. Instructional practices refer to the activities teachers carry out in the classroom like teaching methods, activities, assessment and classroom management techniques. Research has linked instructional practices to students' academic achievement. What teachers do in the classroom is a good predictor of their students' achievement (Brophy, 2000; Seidel & Shavelson, 2007; Creemers & Kyriakides, 2008). Instructional practices consistently predict students' learning outcomes. If students are not exposed to and do not master the ability to think insightfully and critically, they will be unable to compete in a modern global economy. The instructional processes, materials and assessment are critical in enhancing higher order thinking skills. It is on the basis of this that the study seeks to find out if teaching practices like assessment, teaching methods, instructional material used in secondary school classrooms in Cameroon enhance higher order thinking skills in secondary school students.

2. Review of Literature

2.1 Teaching Methods and the Development of Higher order thinking Skills

Haladyua (1997) states that for higher order thinking to be visible in the classroom, the teacher's role must shift from that of an "over knowing body" to that of a facilitator. That means the classroom must be student-centered. This supports the open expression of ideas, provides active modeling of thinking processes, develops thinking skills and motivates students to learn. Walker (2003) asserts that an assortment of questioning

tactics exists to promote critical thinking. Depending on how a question is asked, the student may use various critical thinking skills such as interpretation, analysis, and recognition of assumptions to form a conclusion. Questions are only as good as the thought put into them and should go beyond knowledge level recall.

Guleker, (2015) reports that collaborative learning is one technique often scarce in high educational settings where instructors rely on a combination of lectures and discussions as their primary instructional method (Palmer 2002). The peer support system makes it possible for the learner to internalize both external knowledge and higher order thinking skills and to convert them into tools for intellectual functioning. Also, students also find helpful, case studies, simulations and scenarios (Brookfied, 2013). Interactive lectures are a convenient active leaning strategy for university professors as they can still rely on lecturing but make it more effective for learning. In the literature cited by Brookfield (2006), it is stated that no lecture should contain more than twenty-minute blocks of uninterrupted teacher talk.

McKeachie (2002) observes that discussion is a hybrid form of teaching because students give and receive information and is often called the prototypic method and a core component of active higher order thinking skills. However, it also leads to deeper levels of learning because in order to build on each other's ideas students need to evaluate, create, apply and analyze the viewpoints of others (Hadjivanoy, 2007).

Arends (2004) opines that role play develops problem solving skills among learners, provides situations, build skills for real world application when real world experiences are not readily available. When assuming certain roles, learners try to evaluate and analyze the situations by choosing words that best suit the incidence. However, considering the point that no one method can be appropriate to ensure reasonable learning outcomes, we must always advocate an eclectic approach in the use of teaching methods (Tchombe, 2004) that do promote higher order thinking skills.

2.2 Teaching Learning Materials and the Development of Higher Order thinking Skills

Tambo (2012) used the term educational technologies to describe teaching and learning materials. He defines them as the various teaching materials devices or processes that are capable of assisting the teacher to teach more effectively and helping learners to learn more effectively. No teaching learning materials is worthless as far as the development of higher order thinking skills is concerned. But what matters is the way the teacher uses this material. Traditional resources like visual aids (maps, charts, samples, objects, etc.) together with print resources like textbooks and journals can be used to provoke a discussion, analysis, debate or serve as a basis for questioning, all of

which stimulate critical thinking. According to Means and Olson (1994) technological gadgets such as the computers, can stimulate problem solving and thinking activities when they are used successfully. Kennedy (1994) explains that interactive computer programs are a positive influence on the development of higher order thinking skills. Information and Communication Technology should be employed as a stepping stone to the discovery of new relationships between ideas. Baylor and Richchie (2002) found that the level of constructivist modes of technology use, dictated the impact of the technology on the higher order thinking. In stating the importance of ICTs in the classroom and their capability of enhancing higher order thinking skills, Jonessen (2000), states that ICTs help in simulation activities in the classrooms. He further states that watching a lesson through simulation, learners can transfer what they view in the simulation and solve new and concrete situations. Also through simulations, learners can think deeply about the content they are learning and so are critical

2.3 Assessment and the Development of Higher Order Thinking Skills

Assessment is the process of gathering and interpreting evidence to make judgments about student's learning. It is the crucial link between learning outcomes, content and teaching- learning activities. The purpose of assessment is to improve learners' cognitive abilities as far as thinking skills are concerned, (Lipman, 2003). Researchers have made several suggestions for designing assessment ideally suitable for assessing higher order thinking skills. First, open ended problem types may be more appropriate for assessing higher order thinking skills, than traditional multiple choice formats. Ku (2009) argues that, available empirical evidence suggests that open ended measures better capture the construct of higher order thinking because they are more sensitive to the dispositional aspects of higher order thinking skills than are multiple choice measures. For this reason, Ku recommends tests of mixed format, that is, both multiple choice and open ended questions should be set to completely represent the cognitive dispositional aspects of higher order thinking. To him, "*Teachers should adopt different assessment methods, such as exercises that allow students to self-construct answers and assignments that facilitate the practice of strategies used in thinking skills in everyday contexts. When adopting multiple choice exercises, follow up questions should be given to probe students underlying reasoning*".

Assessment tasks should also reflect "authentic" problems, contexts and performances. This means that assessments should be based on simulations that approximate real world problems. Test questions should require students to go beyond the available information in the task to draw inferences or make evaluations. In addition, problems should have more than one plausible or defensible solution, and

there should be sufficient information and evidence within the tasks to enable students to support multiple views.

3. Statement of the Problem

Cameroon's vision to attain industrialization and poverty alleviation as stated in the goals of vision 2035 requires higher order thinking skills. Yet schools seem to be maintaining the old traditional practices which do not enhance higher order thinking skills. There is usually a mismatch between skills offered in schools and those needed outside the classroom (Adams, 2001).In trying to improve on the productivity of learners as far as higher order thinking skills are concerned, the first ever educational forum in Cameroon in 1995, prescribed a new vision for Cameroonian schools, in which one of them was the intellectual development of the learner. Effort and reflections in this direction led to the birth of a new pedagogic process, which was intended to mobilize and encourage Cameroonian teachers to shun outdated teaching practices such as rote learning and a call for a shift from teacher- centered to learner-centered pedagogy in an attempt to improve higher cognitive skills among learners. Society is increasingly demanding that secondary education produces school leavers functionally ready for work as well as prepares them for higher education. However, teaching practices do not seem to have changed to respond to this new vision, thus the study attempts to establish the extent to which teaching practices enhance higher order thinking skills in secondary school students.

4. Objective

The study aims at examining the extent to which teaching practices enhance higher order thinking skills among secondary school students in the North West Region of Cameroon.

4.1 Hypotheses

- Teaching methods do not influence higher order thinking skills among secondary school students in the North West Region of Cameroon.
- Assessment activities do not influence higher order thinking skills among secondary school students in the North West Region of Cameroon.
- Teaching learning materials do not influence higher order thinking skills among secondary school students in the North West Region of Cameroon.

4.2 Methodology

The study was a survey. An observation guide and a closed ended questionnaire consisting of 32 items aimed at addressing teaching practices in developing higher order thinking skills was designed with indicators of teaching practices as teaching methods, assessment activities and teaching learning materials. Teaching practices in 4 classes were observed thrice each and through a random sampling technique, a total of 320 participants (students) were drawn from three divisions of the North West Region namely, Bui, Mezam and Donga Mantung Division. To ensure reliability, test retest reliability was conducted on 10 students from GBHS Bamenda town. The reliability was calculated using Crobach Alpha which stood at 78 which signifies that the instrument was reliable. The data were analysed inferentially using Pearson, Product Correlation Coefficient. The decision level was at 0.05.

5. Results and Discussion

Results from the observation revealed that teachers made a commendable attempt to make use of methods that enhance higher order thinking. This could be seen in the use of open-ended questions and probing. Also, discussions which included expressing contrary view points were common even though there was also place for the use of lecture. Students were occasionally assigned to groups and given assignments to present in class. With regard to assessment, many of the oral questions were recall questions. However, take home assignments and sequential assessments had elements of higher order thinking. For the most part only textbook and charts were used as instructional material in class. Real objects were used only in the science laboratories. No audio-visual resource was used. Results of the observation corroborate with those of the questionnaire as seen below:

5.1 Teaching Methods and Higher Order Thinking Skills

Table 10: A correlation of teaching methods and higher order thinking skills

		Teaching methods	**Higher order thinking skills**
Teaching methods	Pearson Correlation	1	.837*
	Sig. (2-tailed)		.038
	Sum of Squares and Cross-products	20464.000	8519.000
	Covariance	2923.429	1703.800
	N	8	6
Higher order thinking skills	Pearson Correlation	.837*	1

	Sig. (2-tailed)	.038	
	Sum of Squares and Cross-products	8519.000	5307.333
	Covariance	1703.800	1061.467
	N	6	6

*. Correlation is significant at the 0.05 level (2-tailed).

From table1, the correlation coefficient value is .837 which is significantly above 0.05 level. This means that, teaching methods have a significant influence on higher order thinking skills amongst secondary school students in the North West Region of Cameroon, indicating that, teachers make use of teaching methods, which enhance higher order thinking skills. Therefore, creativity, problem solving, decision making, critical thinking, are enhanced in the learners through teaching methods. Research has shown that these skills can be significantly enhanced through interventions in classroom teaching practices particularly through methods that do encourage or favor the transmission of these skills (Hopson, 2001). Such methods support the open expression of ideas, provides active modeling of thinking processes, develops thinking skills and motivates students to learn. With the use of methods that enhance higher order thinking there is a probability that the students will be able to respond to real-world demands (Vijayaratnam, 2012) and can meaningfully contribute to Cameroon's attainment of vision 2035, everything being equal.

5.2 Assessment Activities and the Promotion of Higher Order thinking Skills

Table 2: A correlation of assessment activities and higher order thinking Skills

		Assessment activities	**Higher order thinking Skills**
Assessment activities	Pearson Correlation	1	-.041
	Sig. (2-tailed)		.938
	Sum of Squares and Cross-products	21890.875	-420.000
	Covariance	3127.268	-84.000
	N	8	6
Higher order thinking Skills	Pearson Correlation	-.041	1
	Sig. (2-tailed)	.938	
	Sum of Squares and Cross-products	-420.000	5307.333
	Covariance	-84.000	1061.467
	N	6	6

From the Table 2 above, the correlation coefficient value is -.041 which is below the significant level of 0.05. This means that assessment activities do not influence higher order thinking skills amongst secondary students in the North West Region of Cameroon. Marso and Piggo (1993) concluded that, many teachers do understand the power of higher order thinking skills in elevating problem solving and creativity in our society, but they do hardly test students beyond the first two stages that is knowledge and comprehension. Studies analyzing classroom tests over many decades have found that most teacher-made tests require only recall of knowledge or information. Bloom in his taxonomy of educational objectives, lists different words that teachers can use to set questions for different levels but teachers do not seem to be making use of this taxonomy. Therefore, there is a likelihood that students leave school without the system measuring the extent to which critical thinking has been enhanced. As such, there is no guarantee that they will be able to compete in a global economy.

5.3 Teaching Materials and the Promotion of Higher Order thinking Skills

Table 3: A correlation of Teaching learning materials and Higher Order thinking Skills

		Teaching learning materials	Higher Order thinking Skills
Teaching learning materials	Pearson Correlation	1	-.754
	Sig. (2-tailed)		.084
	Sum of Squares and Cross-products	124002.875	-17333.667
	Covariance	17714.696	-3466.733
	N	8	6
Higher Order thinking Skills	Pearson Correlation	-.754	1
	Sig. (2-tailed)	.084	
	Sum of Squares and Cross-products	-17333.667	5307.333
	Covariance	-3466.733	1061.467
	N	6	6

From Table 3 above, the correlation coefficient value is -.754 which is significantly below the significant level of 0.05. This means that teaching learning materials do not influence higher order thinking skills among secondary school students in the North West region of Cameroon and so students may not develop higher order thinking skills like decision making, problem solving, logical reasoning and creativity which are important elements for societal development. At this rate vision, 2035 may not be

attained. Findings by Nooman (2009) show that teaching and learning materials do improvements on the thinking capacity of learners. Pescatores (2007) discovered that most teachers use mainly textbooks as teaching aids, though textbooks depending on the content may promote higher order thinking skills. Jonessen (2000) argues that the 21st century classroom does not only need textbooks as teaching aids but rather textbooks must work in conjunction with modern technological gadgets like motion pictures, televisions, video tapes, computers etc. for effective transmission of higher order thinking skills to take place.

6. Conclusion and Recommendations

Conclusively, it is worthy of note that teaching practices enhance higher order thinking skills only to a small extent. Methods, assessment activities and teaching learning materials, form a package which is similar to a system. This means that when one component is affected, the whole system is affected. If teachers use teaching methods that can promote higher order thinking skills such as discovery and project based learning, but the teaching materials are not there to facilitate teaching, teaching may not be effective. Barel (2006) opines that when students leave school without these skills, they do not function well in the society as they cannot find jobs that can match with the skills they obtain from schools. As a result, many educationists continue to say that, if our classroom practices do not change from enhancing lower order thinking to enhancing higher order thinking, then it is a waste of resources because spending money and time to educate people who cannot serve themselves and the society in which they operate, is wasteful.

For Cameroon to achieve the goals of vision 2035, especially those on poverty reduction and industrialization, secondary school teaching practices must shift from traditional methods on teaching methods, assessment activities, teaching learning materials and instructional objectives that only concentrate on the development of lower or order thinking skills like knowledge and comprehension, to those that promote higher order thinking skills, such as application, analysis, synthesis and evaluation.

Based on the above findings it is recommended that teachers as professionals should make a conscious effort to employ teaching practices that do promote higher order thinking skills. For them to successfully make use of appropriate teaching practices they need support from the school management. Specifically, the following strategies may help improve teaching practices: professional development should be accorded to teachers, so that teachers can be equipped with the various skills needed to

transform thinking capacities of the learners as far as the development of higher order thinking skills are concerned. Also, teachers should be provided with enough teaching resources, so that they can fulfill the task of developing higher order thinking skills. Furthermore, they should make use of advanced technologies such as computers, radios, televisions to develop their thinking skills. Teachers should also carry out personal research in order to improve on their effectiveness.

Also, pre-service teacher education institutions must improve teacher training. Hence, they must teach cognitive skills of the Bloom's taxonomy to pre-service teachers so that they can teach higher order thinking in the classroom. All stake holders in education should be adequately enlightened through workshops, seminars and conferences on the need to emphasize higher order thinking skills.

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